Amendment

In the Claims:

What is claimed is:

[c1] (Cancelled)

[c2] (Cancelled)

[c3] (Cancelled)

[c4] (Cancelled)

[c5] (Cancelled)

[c6] (Cancelled)

[c7] (Cancelled)

[c8] (Cancelled)

[c9] (Cancelled)

[c10] (Cancelled)

[c11] (Cancelled)

[c12] (Cancelled)

[c13] (Cancelled)

[c14] (Cancelled)

[c15] (Cancelled)

[c16] (Cancelled)

[c17] (Previously Presented) A multiphase alternating current plasma generator, comprising:

an electrode unit comprising fixed electrodes, plasma injector that introduces an ionized stream into area of minimum convergence between the fixed electrodes, and a nozzle unit joint, wherein the electrode unit is joined with the nozzle unit to form a united electric discharge chamber;

a multiphase transformer that is connected to a common low-voltage alternating current network, wherein each fixed electrode is fed from the multiphase transformer;

a plurality of pneumatic feed rings that feed a plasma-forming gas from an external source into the electric discharge chamber, wherein the pneumatic feed rings comprise radial holes tangentially located along the walls of the electric discharge chamber so as to provide a boundary layer of plasma-forming gas along the chamber walls wherein the temperature of the boundary layer is significantly lower than in the main plasma-forming gas stream along the chamber length; and

a controller with monitoring circuits that ensures operation of the plasma generator include an emergency cut-off operation.

[c18] (Previously Presented) The generator of claim 17, further comprising:

a nozzle unit of cylindrical shape that allows changing the length and the diameter of the electric discharge chamber, the outlet temperature of the electric discharge chamber, and plasma-forming gas flowrate through of the electric discharge chamber.

[c19] (Previously Presented) The generator of claim 17, wherein the multiphase transformer provides a supply voltage of control 220 V and power voltage between 400 V - 4000 V , where the power voltage allows step increases in voltage that allows sharply increase the plasma generator power at the same current.

[c20] (Previously Presented) The generator of claim 17, wherein the plasma injector comprises a single-phase AC plasma 4-10 kW generator and a special profiled nozzle that is joined to the electrode unit of the plasma generator, wherein the special profiled nozzle creates concentration of electrons $n_e \sim (10^{13}\text{-}10^{14})$ cm^{-3} in the electric discharge chamber volume that reduces wear of electrodes to less than 10^{-6} g/C.

[c21] (Previously Presented) The generator of claim 17, wherein includes the plasma injector includes a high frequency power source with supply voltage frequency between 1-10 kHz, where the injector simultaneously supplies an ionized jet of plasma-forming gas into the gap between power electrodes and simultaneously switches the poles of the injector power source to each power electrode.

[c22] (Previously Presented) The generator of claim 17, wherein the multiphase transformer includes an amount of secondary windings equal to the amount of electrodes and a capacity condenser that allows the generator to achieve a power factor close to 1.

[c23] (Previously Presented) The generator of claim 17, further comprising current limiting reactors with a variable inductance for regulating the current from the multiphase transformer.

[c24] (Previously Presented) The generator of claim 23, further comprising a cooling system for current limiting reactors, where the cooling system comprises a flowmeter, a plurality of thermocouples, and flow transducer of water.

[c25] (Previously Presented) The generator of claim 17, wherein the plurality of pneumatic feed rings are tangentially placed uniformly along the electric discharge chamber length with radial holes to create a diffuse turbulent

discharge of plasma-forming gas that forms a boundary layer along the walls with the significantly lower temperature than in the main gas stream.

[c26] (Previously Presented) The generator of claim 17, wherein the fixed electrodes installed in the electric discharge chamber have variable cross-section area that is 2.8 times larger on the end of the electrode than at the beginning of the electrode.

[c27] (Previously Presented) The generator of claim 17, wherein the fixed electrodes have a declination to the axes of the plasma generator from 0-60 degrees, where the declination is dependent on the plasma generator power and flowrate of the plasma-forming gas.

[c28] (Previously Presented) The generator of claim 17, further comprising an electric drive that regulates and maintains of the inter-electrode gap to allow adjustment of the generator.